PATENT COOPERATION TREATY

From the INTERNATIONAL BUREAU

PCT

NOTIFICATION OF ELECTION

(PCT Rule 61.2)

To:

Commissioner
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United States Patent and Trademark
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Arlington, VA 22202
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in its capacity as elected Office

Date of mailing (day/month/year) 21 June 2001 (21.06.01)	
International application No. PCT/AU00/01204	**Applicant's or agent's file reference** P16325PCAU
International filing date (day/month/year) 02 October 2000 (02.10.00)	**Priority date** (day/month/year) 30 September 1999 (30.09.99)
Applicant HERBERT, John	

1. The designated Office is hereby notified of its election made:

[X] in the demand filed with the International Preliminary Examining Authority on:

12 April 2001 (12.04.01)

[ ] in a notice effecting later election filed with the International Bureau on:

2. The election [X] was

[ ] was not

made before the expiration of 19 months from the priority date or, where Rule 32 applies, within the time limit under Rule 32.2(b).

The International Bureau of WIPO **34, chemin des Colombettes** **1211 Geneva 20, Switzerland**	Authorized officer Eugénia Santos (Fax 338.87.40)
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INTERNATIONAL SEARCH REPORT

International application No.
PCT/AU00/01204

A. CLASSIFICATION OF SUBJECT MATTER

Int. Cl. [7]: A61M 5/00

According to International Patent Classification (IPC) or to both national classification and IPC

B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

Electronic data base consulted during the international search (name of data base and, where practicable, search terms used)
DWPI + keywords

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	FR 2650511 A (BREACK) 8 February 1991 See whole document	1-8
A	WO 99/26680 A (LEO PHARMACEUTICAL PRODUCTS LTD A/S) 3 June 1999	

☐ Further documents are listed in the continuation of Box C ☒ See patent family annex

* Special categories of cited documents:

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"E" earlier application or patent but published on or after the international filing date

"L" document which may throw doubts on priority claim(s) or which is cited to establish the publication date of another citation or other special reason (as specified)

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"Y" document of particular relevance; the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other such documents, such combination being obvious to a person skilled in the art

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Date of the actual completion of the international search	Date of mailing of the international search report
1 December 2000	8 - DEC 2000
Name and mailing address of the ISA/AU AUSTRALIAN PATENT OFFICE PO BOX 200, WODEN ACT 2606, AUSTRALIA E-mail address: pct@ipaustralia.gov.au Facsimile No. (02) 6285 3929	Authorized officer A.R. HENDRICKSON Telephone No : (02) 6283 2415

INTERNATIONAL SEARCH REPORT
Information on patent family members

International application No.
PCT/AU00/01204

This Annex lists the known "A" publication level patent family members relating to the patent documents cited in the above-mentioned international search report. The Australian Patent Office is in no way liable for these particulars which are merely given for the purpose of information.

Patent Document Cited in Search Report		Patent Family Member			
FR	2650511	NONE			
WO	99/26680	AU	13334/99	EP	1024843

END OF ANNEX

INTERNATIONAL SEARCH REPORT

International application No.
PCT/AU00/01204

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Name and mailing address of the ISA/AU AUSTRALIAN PATENT OFFICE PO BOX 200, WODEN ACT 2606, AUSTRALIA E-mail address: pct@ipaustralia.gov.au Facsimile No. (02) 6285 3929	Authorized officer A.R. HENDRICKSON Telephone No : (02) 6283 2415

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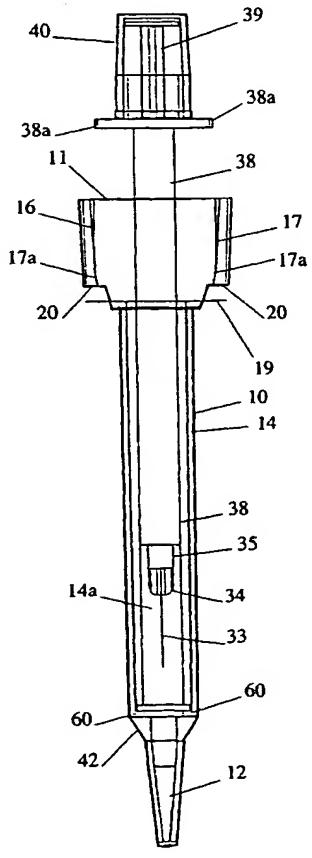
[Continued on next page]

(54) Title: SYRINGE DISPOSAL DEVICE



(57) Abstract: Disclosed is a syringe disposal device (10) suitable for disposal of a single syringe. The device is suitable for disposal of syringes (30) having a needle (33), a barrel (38), a plunger (39) and on the barrel (38) or plunger (39), a transversely extending flange portion (38a). The disposal device (10) may include a needle encapsulating portion (12), a syringe barrel encapsulating portion (14) and a syringe retention portion (16). The syringe retention portion (16) has an open end (18) to allow syringe (30) to be inserted into device (10). The opposed end (19) of syringe retention portion (16) communicates the retention portion (16) with syringe barrel encapsulating portion (14). Engagement means (20) are provided at, or proximate, the opposed end (19) of the syringe retention portion (16) for retaining syringe (30) within the disposed device (10) after passage of the transversely extending flange (38a) past the engagement means (20) by interference fit. The disposal device (10) is advantageously of tapered form.

WO 01/23019 A1

Published:
— *With international search report.*

For two-letter codes and other abbreviations, refer to the "Guidance Notes on Codes and Abbreviations" appearing at the beginning of each regular issue of the PCT Gazette.

SYRINGE DISPOSAL DEVICE

Field Of Invention

This invention relates to a syringe disposal device and, in particular, to a device suitable for encapsulation and disposal of a single syringe.

Prior Art

The hazards of used needles are now well recognised. It is well known that a number of diseases may be transmitted by reuse of syringes. For example, the transmission of AIDS and Hepatitis viruses such as Hepatitis C through reuse of needles is now well documented.

Transmission of disease is not only possible through reuse of needles but indeed may be caused by so called needle stick injury in which a needle inadvertently punctures the skin of a person allowing transmission of a virus to that person. A number of proposals for dealing with such hazards have been documented in the patent literature.

For example, French Patent No. 2650511 describes a syringe protection device which is intended to facilitate preparation of injections. The device is also intended to eliminate the risk of pricking injuries as well as the possible recovery of the used syringes.

Most such proposals are predicated on use in a therapeutic environment in which many needles are used on a daily basis and a centralised disposal unit may readily be used for the purpose of needle disposal. In such environments, the risk of reuse is relatively small and the prime concern is to ensure that disease transmission through needle stick injury does not occur. A number of technologies for needle destruction and/or containment are known. Grinding, melt-fusion and other technologies are available which confine used needles in a safe environment subsequent to other disposal steps.

Real hazards remain, however in the non-therapeutic environment where availability of a centralised needle disposal system is problematic. Even if such disposal facility is available there remains the problem that accidents may occur while conveying a used needle to the disposal facility. It is understood that while there has been a dramatic increase in the number of syringes distributed and collected from disposal units with different sharps containers, surveys have

The transversely extending portion may be constituted by a syringe barrel outer surface or a surface of a transversely extending portion of a flange of the plunger or syringe barrel or both. It will ordinarily be constituted by the broadest portion of the disposed syringe thus bearing on the engaging means to prevent syringe retraction by exertion of reasonable force after use.

A number of lug engagement means may be provided for engaging the transversely extending bearing portion. Alternatively, an engaging face of generally annular shape may be provided at the opposed end of the syringe retention portion. Interference fitting or press fitting past the engaging means provides greater assurance that the syringe will be retained within the disposal device following use. To this end, it is preferred that a rigid material is used for fabrication of the device. A suitable rigid polymer is preferably to be used for this purpose, noting that such polymer should have nature requisite to, and fabricated for preventing needle puncture.

The disposal device may incorporate a morse taper, particularly at the transition between the syringe barrel encapsulating portion and the needle encapsulating portion. This accommodates the needle carrier, hub, needle and/or upper end of the syringe barrel in a neat engaging fit similar to that employed for fitting of sockets and the like in tool kits.

The disposal device may be designed such that at least one of the needle encapsulating portion and the syringe barrel encapsulating portion have a multi-stepped configuration for increasing the probability of the needle impacting the inner surface during retaining of a syringe for disposal thereof. A disposal device of this design is described in the Applicant's co-pending Australian Provisional Patent Application No. PQ6999, "Syringe Retaining Device", filed 18 April 2000, the contents of which are hereby incorporated herein by reference.

The syringe disposal unit is suitable for disposal of a syringe following an injection event, especially in a non-therapeutic environment.

In another aspect of the invention, the syringe disposal device may be retained in a holder which includes a syringe, and may include accessories for use in an injection. Such accessories may include distilled water or other solvent for an injectable to be used in the injection and other equipment, such as spoons, for injection preparation. A spoon or receptacle of preferred type may have a wall

Figure 5 shows the section of Figure 3 with a syringe needle cover cap in place on the syringe maintaining it in a non-engaged position;

Figure 6 shows a capped syringe preventing it being engaged in the syringe disposal device in accordance with a further embodiment of the present invention; and

Figure 7 shows a holder for the syringe disposal device in accordance with a further aspect of the present invention.

Detailed Description Of Preferred Embodiments

Referring to Figure 1 of the drawings, there is shown the syringe disposal device 10 of the present invention fabricated from a rigid polymeric material. The syringe disposal device 10 includes a needle encapsulating portion 12, a syringe barrel encapsulating portion 14 and a syringe retention portion 16. The plunger retention portion 16 has a tapered internal wall 17 and it will be observed that said accommodating portion 16 has greater diameter along substantially its whole length than an outer diameter of the syringe barrel encapsulating portion 14 and needle encapsulating portion 12.

The disposal device 10 is suitable for disposing of any kind of syringe. The syringe 30 shown in Figure 1 and the drawings generally is of a conventional type having a needle 33, a hub 34, a needle carrier 35, a barrel 38 and a plunger 39. The barrel 38 has transversely extending flange portions 38a which, on engagement with the engaging means 20, retain the syringe 30 within disposal device 10.

The syringe retention portion 16 has an open end 18 to allow syringe 30 to be placed by pressing into the device 10. Particularly, it is of sufficient lateral dimension to amply accommodate barrel 38 flanges 38a at open end 11, thus assisting with location. At another opposed end 19, retention portion 16 communicates with the syringe barrel encapsulating portion 14. The opposed end 19, of circular or oval shape, is provided with engagement means 20 retaining a syringe 30 within the disposal device 10 after passage of a flange portions 38a past engaging means 20 by interference fitting.

In Figures 1 and 5, the syringe 30 is shown in a non-retained position as may be suitable prior to an injection and readily accommodated by the inventive device. It will be noted, in this case, that location of cap 40 at the end of plunger

flange portion 38a seals the syringe barrel 38 encapsulating portion 14 and this minimises risk of harmful fluids coming into contact with a user of disposal device 10.

The disposal device 10 is conveniently manufactured from a rigid polymeric material. This is not to preclude fabrication from other materials, but use of a substantially rigid material of fabrication tends to promote efficacy of interference fitting and is preferred for use in this device 10. It is not intended that the engaging means 20, as formed by opposed end 19, wall portion 17a, engaging surface 16a and flange portion 38aa be substantially flexible as retraction of syringe 30 then becomes a real danger. The polymeric material must have sufficient stiffness to prevent puncture by needle 33. Polyamide polymers, such as nylons, may be most suitable for this application. One example of a nylon is that polymer sourced under the trade mark ZYTEL, a Registered Trade Mark of Dupont.

It is not necessary that it be the transversely extending flange portion 38a of the syringe 30 that passes the engaging surface 16a.

Another portion of the syringe 30 may alternatively or additionally be engaged and this may be necessary for syringes of other design. Further, other forms of engaging means may be contemplated by the present invention. For example, discrete lugs could be used rather than an annular engaging surface.

Otherwise, the transversely extending portion may be formed by a syringe barrel 38 outer surface or indeed any other appropriate surface of the syringe 30. It is contemplated that the disposal device 10 will be suitable for disposal of all conventional designs of syringe as, in this way, efficacy of disposal device 10 will be best promoted.

It will be observed that when syringe 30 is properly retained within the device 10, a lower end of the syringe barrel 38c, the needle carrier 35 and hub 34 are retained by light press fit within a morse taper 60 formed at the transition 42 between the syringe barrel encapsulating portion 14 and the needle encapsulating portion 12 as conveniently shown in Figure 4. Indeed, when the lower end 38c of the syringe barrel 38 comes into contact with morse taper 60, this will inform the intra-venous drug user that the syringe 30 is safely stored within disposal device 10. A clicking sound generated by passage of transversely

Holders 100 may be disposed of as desired by the user but could be collected in a central disposal area. A condition of needle exchange may be return of the holders 100. In any event, if the device is properly used, the public health risks posed by the use of syringe 30 are much reduced.

Modifications and variations may be made to the present invention after reading of the disclosure by a skilled reader. Such modifications and variations are intended to form part of the present invention. For example, a cover may be provided for device 10 at its open end for purposes of sterility. The barrel encapsulating and needle encapsulating portions may be integrated into one portion.

6. The syringe disposal device of any one of claims 1 to 5 in which a body of said device is of tapered form.

7. A kit including a holder for retaining a syringe disposal device as claimed in any one of the preceding claims; and said syringe disposal device.

8. The kit of claim 7 including accessories for use in an injection.

Fig. 1

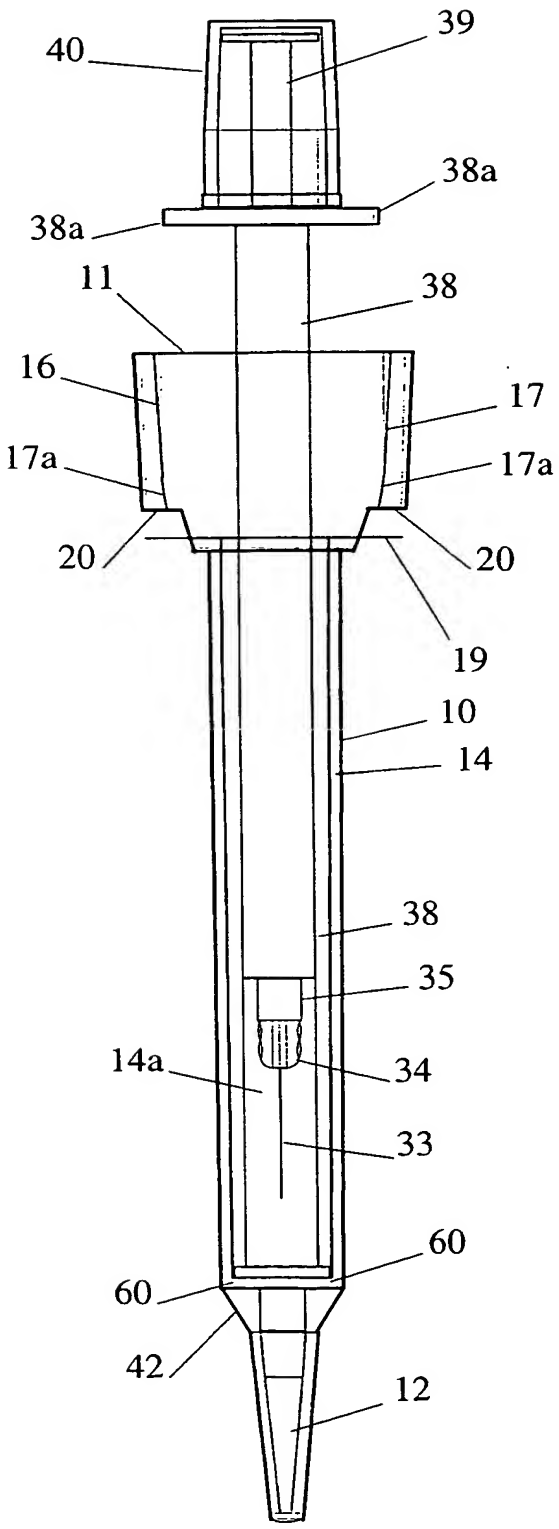

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Fig. 2

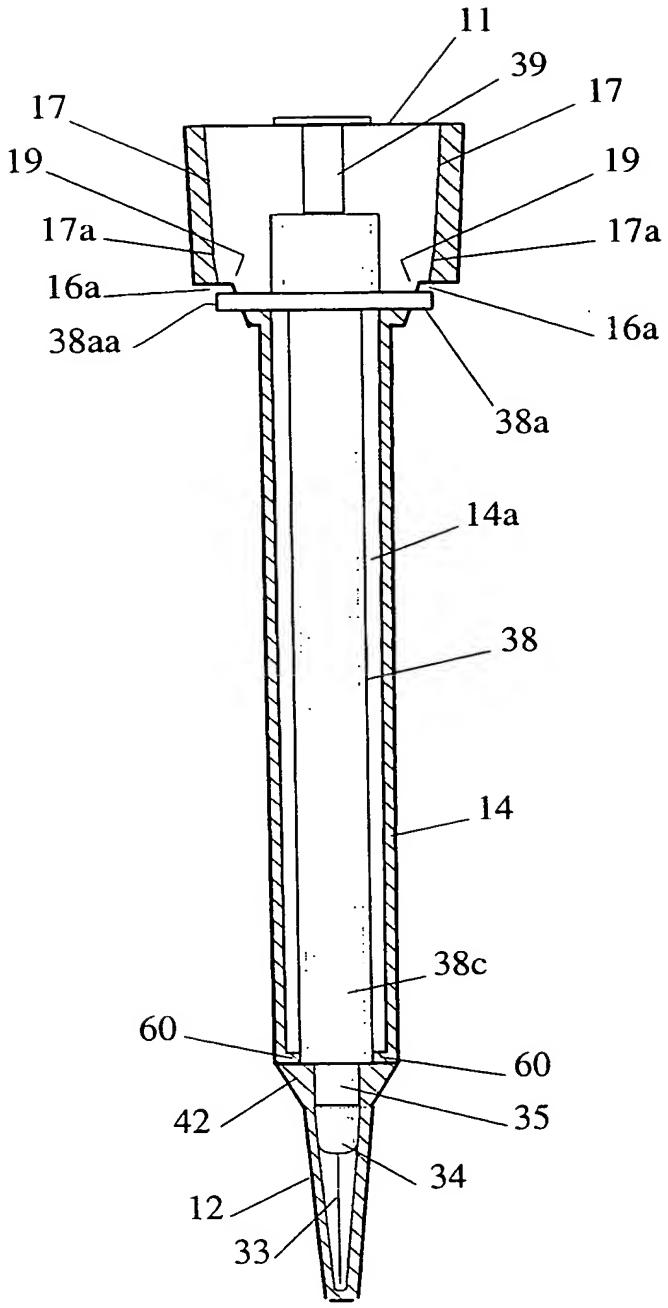
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Fig. 3

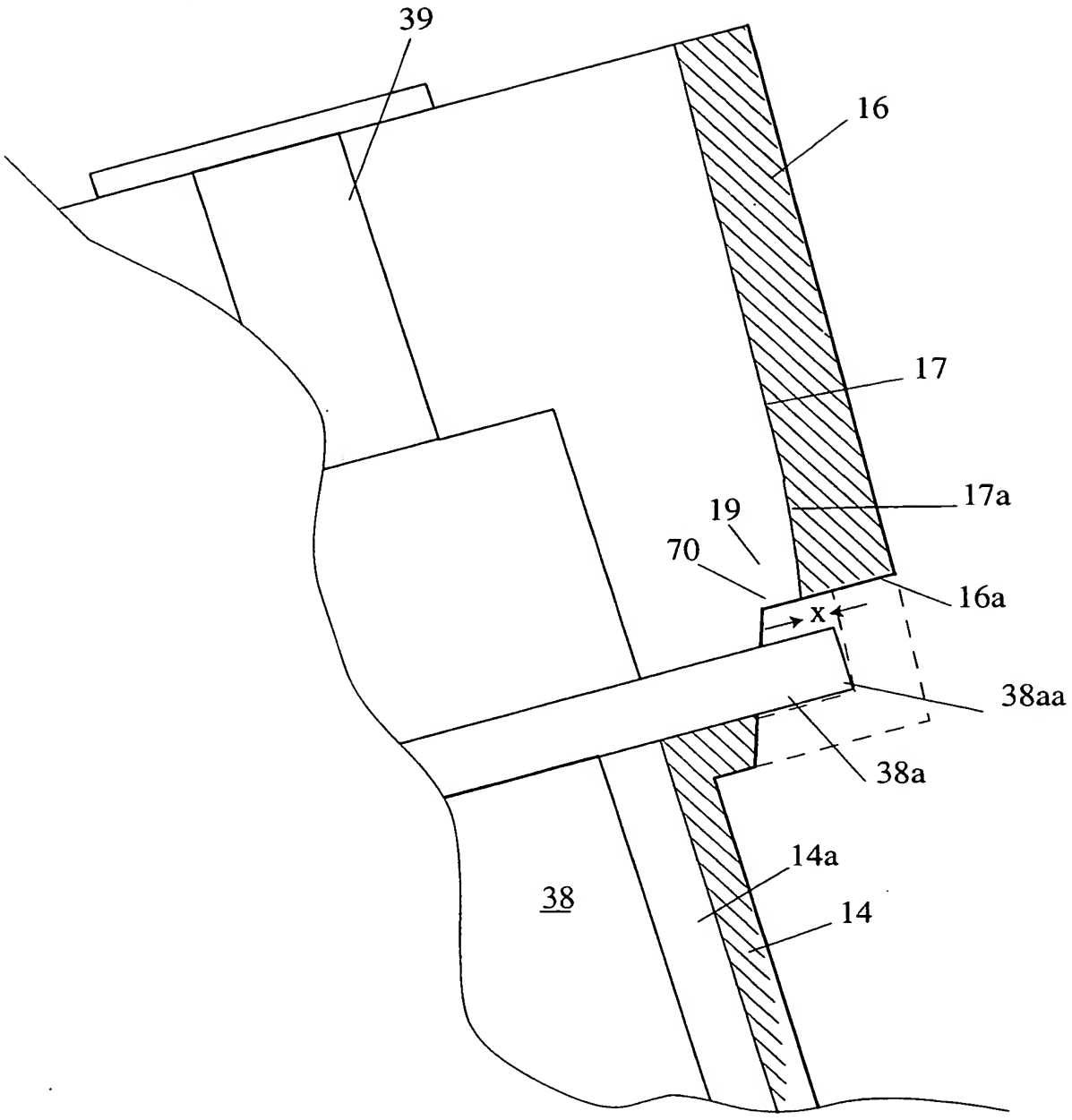

Fig. 4

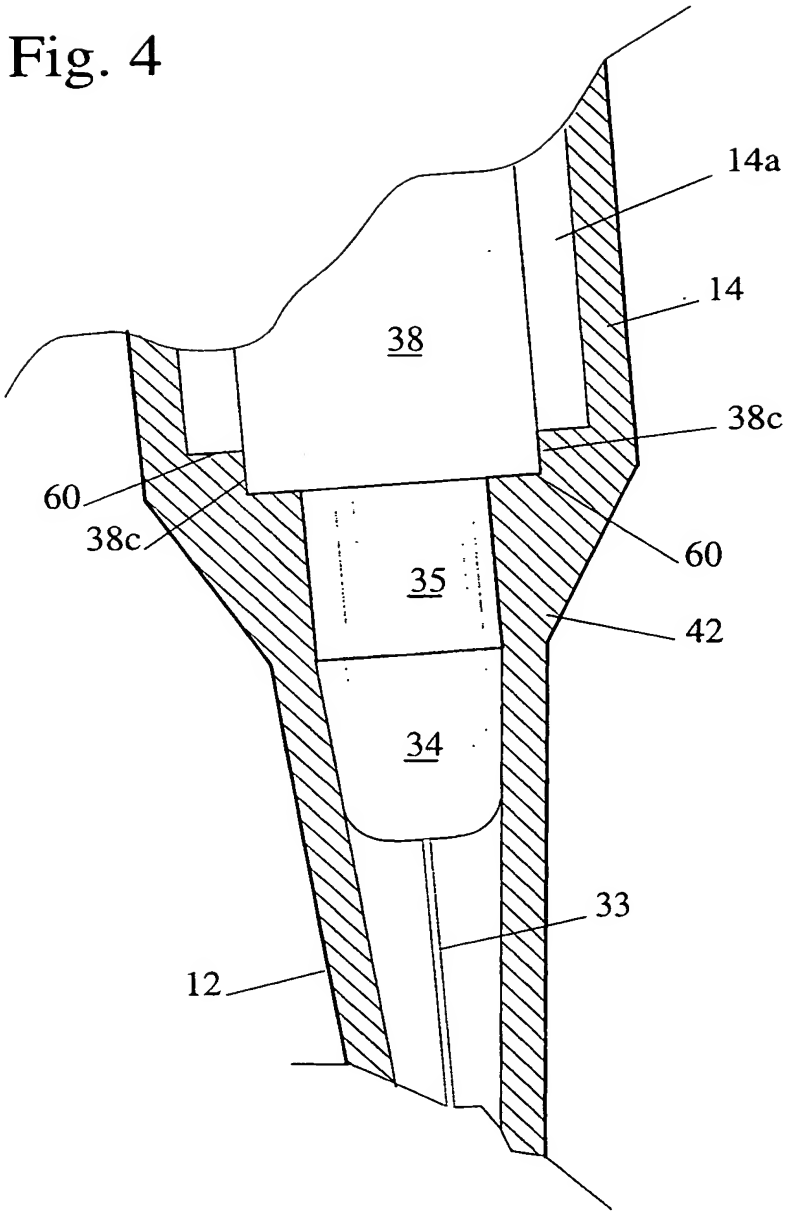

Fig. 5

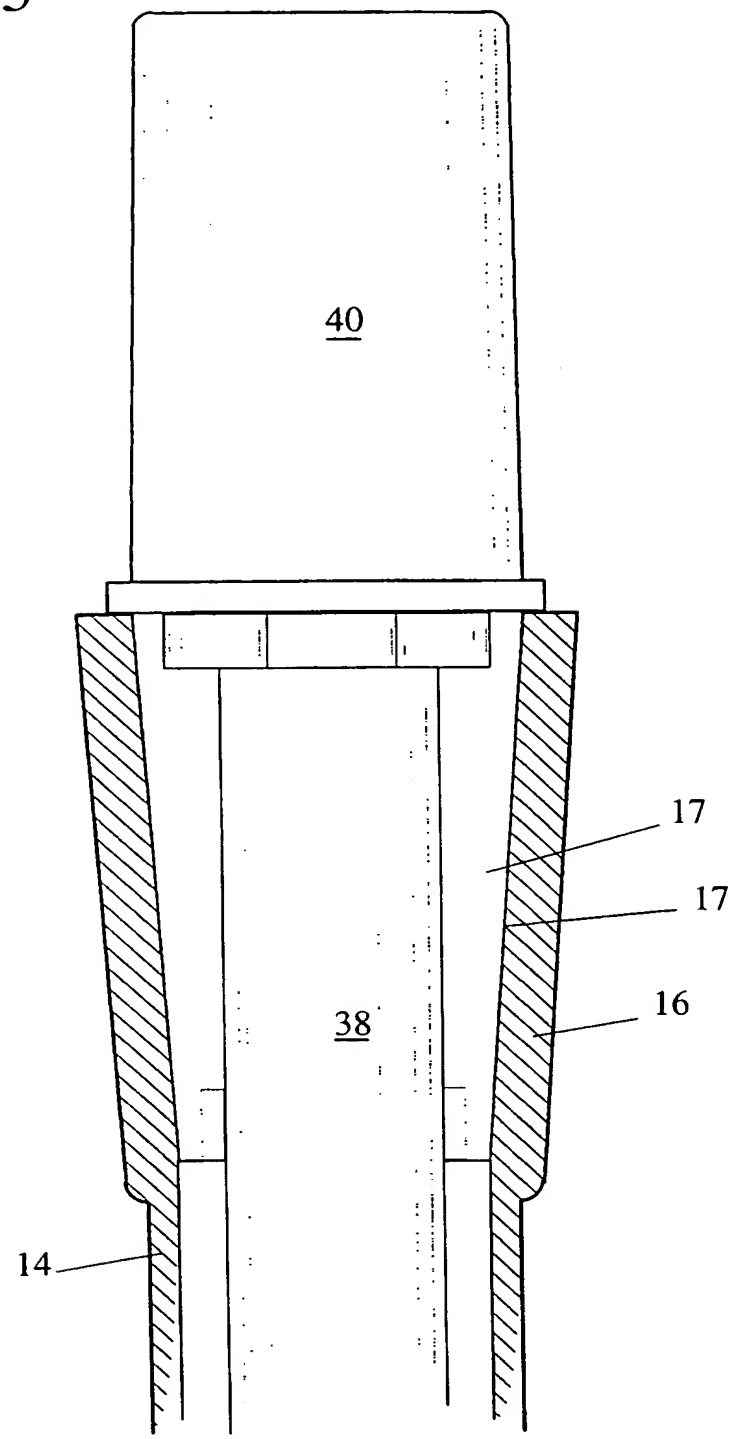

Fig. 6

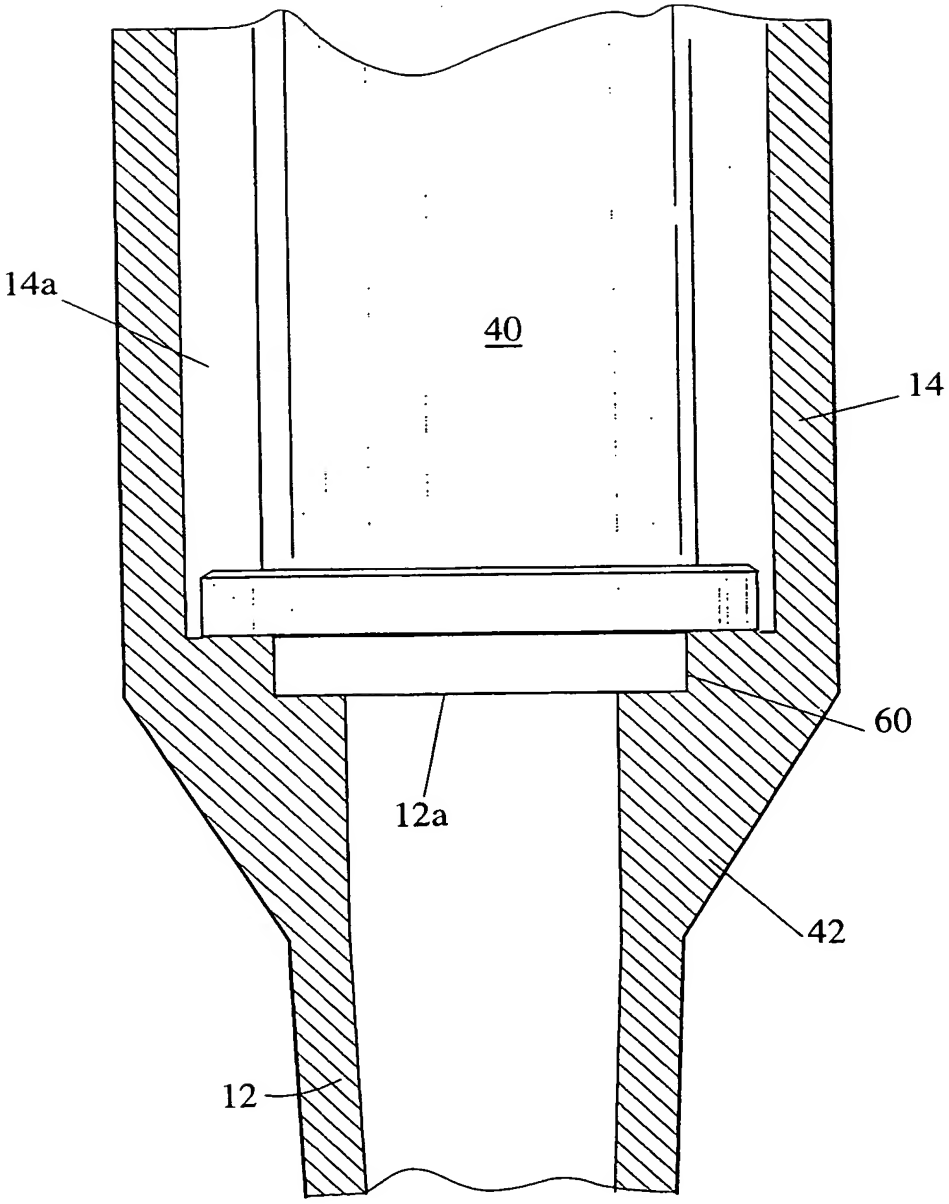

Fig. 7